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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,382	01/25/2001	Ian Richard Anselm Peak	8795-24 U1	6450

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EXAMINER	
FORD, VANESSA L	

ART UNIT	PAPER NUMBER
1645	

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/771,382	PEAK ET AL.	
	Examiner	Art Unit	
	Vanessa L. Ford	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-29 and 31-46* is/are pending in the application.

4a) Of the above claim(s) *26,27,42 and 43* is/are withdrawn from consideration.

5)☒ Claim(s) *33 and 34* is/are allowed.

6)☒ Claim(s) *28,29,31,32,35-41 and 44-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/12/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL ACTION

1. This Office Action is responsive to Applicant's amendment and response filed April 12, 2004. Claims 28, 29, 33, 35-36 have been amended. Claims 37-46 have been added. Claims 1-25 and 30 have been cancelled. Claims 42 and 43 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species. To Address Applicant's concerns regarding the election of species, Applicant elected SEQ ID NO: 11 to be examined. Therefore, the other species, e.g. SEQ ID Nos. 1-10 are non-elected species. As stated in the last Office Action, the Examiner is also examining SEQ ID NOs: 23 and 35 which represent two species of the claimed genus of polypeptides as claimed in SEQ ID NO: 11.

2. The text of those sections of the Title 35, U.S. code not included in this action can be found in the prior Office Action.

Objections Withdrawn

3. In view of Applicant's amendment the objections of claims 33 and 34, pages 8-9, paragraphs 5 and 6 of the previous Office action are withdrawn.

Rejections Maintained

4. The rejection under 35 U.S.C. 112, first paragraph (written description) is maintained for claims 28, 35-36 and newly submitted claims 38-41, and 44-46 for the reasons set forth on pages 2-6, paragraph 3 of the previous Office Action.

The rejection was on the grounds that the claims are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. *This is a written description rejection.*

The specification broadly describes as a part of the invention polypeptides that are variants or fragments of SEQ ID No. 11. The specification discloses the claimed invention also contemplates fragments, derivatives and variants (such as allelic variants) of the exemplified proteins (page 13). The specification states " that amino acids can be deleted from any of the C1-5 sequences set forth in Figure 1, while not all non-conserved amino acids in the V1-4 regions need be deleted in order to reduce strain-specific immunogenicity and isolated proteins of the invention may include fragments of the C1-5 and V1-4 regions" (page 13). The specification also states " that a "fragment" includes an amino acid sequence that constitutes less than 100%, but at least 20%, preferably 50%, more preferably at least 80% or even more preferably at least 90% of said C1, C2, C3 C4 or C5 regions". Applicant has broadly described the invention as embracing any substitution, insertion or deletion change of amino acids throughout the length of the polypeptide sequence. Variants or fragments of SEQ ID No: 11 correspond to sequences from other species, mutated sequences, allelic variants, splice variants, sequences that have a variant degree of identity (similarity, homology), and so forth. None of these sequences meet the written description provision of 35 U.S.C. 112, first, paragraph. The specification provides insufficient written description to support the genus encompassed by the claim. Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.)

The skilled artisan cannot envision the detailed chemical structure of allelic variants or fragments of SEQ ID NO: 11 that are encompassed by the polypeptides of the invention regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmaceutical Co. Ltd.,

18 USPQ2d 1016. In Fiddes v. Baird, 30 USPQ2d 1481, 1483, claims directed to mammalian FGF's were found unpatentable due to lack of written description for the broad class. The specification provided only the bovine sequence.

Therefore, the full breadth of the claim (or none of the sequences encompassed by the claim, i.e. variants or fragments of SEQ ID No: 11) does not meet the written description provision of 35 USC 112, first paragraph. The species specifically disclosed are not representative of the genus because the genus is highly variant. Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 USC 112 is severable from its enablement provision. (See page 1115.)

Applicant urges that claims 35 and 36 as amended are more explicit about which amino acids are conserved and which are variable. Applicant urges that new independent claim 38 uses "consisting of language which is even more specific with respect to the conserved and variable regions of the claimed protein than claim 28. Applicant urges that the exact boundaries of C1-C5 and V2-V4 regions are defined, fragments (other than residues 51 and/or 52-54 of V1 and 144-198 of C3) are excluded and variants are restricted to those where variability occurs in only those amino acids indicated as being non-conserved in SEQ ID NO:11. Applicant urges that likewise, claims 40 and 41 corresponding to claims 35 and 36 are fully supported.

Applicant's arguments filed April 12, 2004 have been fully considered but they are not persuasive. The claims are not limited to polypeptides that correspond to SEQ ID NO:11. The claimed polypeptides encompass variants and fragments of SEQ ID NO: 11. The structure of the claimed isolated protein consists of at least one conserved region of SEQ ID NO:11 that consists of an amino acid sequence selected from conserved regions (i)-(v). Which amino acids are inserted, deleted or substituted in the conserved amino acid sequence? It should be remembered that the statute under 35 U.S.C. 112, first paragraph requires that Applicant was in possession and has

adequately described the claimed invention in the instant specification at the time the application was filed. One of skill in the art would not conclude that Applicant was in possession of the claimed polypeptides since the structure of the claimed polypeptides are not adequately described in the instant specification. Therefore, Applicant has not met the burden required under 35 U.S.C. 112, first paragraph (written description).

5. The rejection under 35 U.S.C. 102(e), is maintained for claims 28-29, 31-32 and 35-37 for the reasons set forth on pages 6-8, paragraph 4 of the previous Office Action.

The rejection was on the grounds that Peak et al teach an isolated polypeptide from *Neisseria meningitidis* and pharmaceutical compositions containing the polypeptide (see the Abstract). Peak et al teach pharmaceutical compositions for treating patients against *N. meningitidis* infections, which comprises polypeptides, fragments, variants or derivatives and a pharmaceutically acceptable carrier (column 16, lines 6-64). Peak et al teach that the compositions of the invention may be used as therapeutic or prophylactic vaccines (column 16, lines 65-66). The claimed isolated protein comprising at least twelve contiguous amino acids of a conserved region of SEQ ID NO: 11 (i.e. amino acid residues 109-120) is the same as amino acid residues 105-116 of SEQ ID NO: 5 of the prior art (see attached sequence alignment). The protein, pharmaceutical composition and vaccine of Peak et al appear to be the same as the claimed invention.

Since the Office does not have the facilities for examining and comparing applicant's protein, pharmaceutical composition and vaccine with the protein, pharmaceutical composition and vaccine of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the protein, pharmaceutical composition and vaccine of the prior art does not possess the same material structural and functional characteristics of the claimed protein, pharmaceutical composition and vaccine). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant urges that they reserve the right to file the appropriate documents to swear behind or otherwise address the status of Peak et al as prior art to this art

rejection. Applicant urges that Peak et al do not "consist of" the C and V regions as now claimed in claim 28. Applicant urges that with respect to claim 38, the idea of deleting V1 (or residue 51 and/or 54-108) thereof) is not taught by Peak et al. Applicant urges that it is not appropriate for the Examiner to rely on general language in the Peak et al disclosure regarding "fragments, variants and derivatives as anticipating the formerly pending claims. Let alone the claims now amended. Applicant urges that there is no disclosure in Peak et al to the effect that V1 (or residues 51 and/or 54-108 thereof) should be targeted for deletion. Applicant urges that the isolated protein of amended claim 28 and new claim 38 consists of the recited C and V regions and Peak et al neither teach or suggest such a protein. Applicant urges that claim 29 defines subject matter that is novel in view of Peak et al and Peak et al do not teach or suggest the particular sequences of SEQ ID NOs: 26 or 38. Applicant urges that Peak et al do not teach or suggest the particular sequences of SEQ ID NO: 23, 24, 25, 26, 35, 36 or 38. Applicant urges that amended claims 35 and 36 and new claims 40-41 which very specifically recite exactly which residues can be varied are novel in light of the general disclosure of "fragments and variants" of Peak et al.

Applicant's arguments filed April 12, 2004 have been fully considered but they are not persuasive. The claims are not limited to polypeptides that correspond to SEQ ID NO: 11. The claims encompass isolated proteins that consist of at least one conserved region of SEQ ID NO: 11 and at least one variable region of SEQ ID NO:11, wherein the isolated protein has at least one fewer variable region than a wild-type NhhA polypeptide and wherein upon administration to a mammal the protein elicits an

immune response against one or more strains of *N. meningitidis*. Peak et al teach an isolated protein as set forth in SEQ ID NO: 11 (see columns 61-64 of Peak et al), which consists of at least one conserved region (e.g. C4, residues 221-239 and C5, residues 249-604) of SEQ ID NO: 11 and one variable region (e.g. V4, residues 240-248) of SEQ ID NO: 11. The protein of Peak et al has 99.7 % sequence identity to SEQ ID NO: 38 (see columns 61-64 of Peak et al). Regarding Applicant's comments concerning newly submitted claims 38-42 and 44-46, it should be noted that residues "144-198" of SEQ ID NO: 11 is not disclosed in the instant specification as a conserved region of the claimed isolated protein. It should be noted that C3 as disclosed by the specification corresponds to residues 135-198 of SEQ ID NO: 11 (see Table 1 of the instant specification). It should be further noted that residue 51 of SEQ ID NO:11 and residues 52-54 of SEQ ID NO:11 are not variable regions of the claimed isolated proteins as set forth in the instant specification. V1 as set forth in the instant specification corresponds to residues 51-108 of SEQ ID NO:11. Regarding Applicant's comment concerning Applicant' right to file the appropriate documents to swear behind or otherwise address the status of the Peak et al as prior art to this art, it should be noted that when the claims of the reference U.S. Patent are directed to the same invention or are obvious variants, an affidavit or declaration under 37 CFR 1.131 is not an acceptable method of overcoming the rejection. See MPEP 706.02(b). Also, see MPEP 2308.01. Therefore, Peak et al anticipate the claimed invention.

6. The rejection under 35 U.S.C. 102(a), is maintained for claims 28-29, 31-32 and 35-37 for the reasons set forth on pages 9-10, paragraph 7 of the previous Office Action.

The rejection was on the grounds that Masignani et al teach an isolated polypeptide from *Neisseria meningitidis* and immunogenic pharmaceutical compositions containing the polypeptide (see the Abstract). The claimed isolated protein comprising at least one a conserved region of SEQ ID NO: 11 that consists of (amino acid residues 221-239 of SEQ ID NO:11) is the same as amino acid residues 189-210 of SEQ ID NO: 4 of the prior art (page 62) and at least one variable region of SEQ ID NO:11 that consists of an amino acid sequence selected from the group consisting of (amino acid residues 240 to 248 of SEQ ID NO:11 which is the same as amino acid residues 162-170 of SEQ ID NO:4). The protein and immunogenic composition of Peak et al appear to be the same as the claimed invention.

Since the Office does not have the facilities for examining and comparing applicant's protein and immunogenic composition with the immunogenic composition and vaccine of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the protein and immunogenic composition and vaccine of the prior art does not possess the same material structural and functional characteristics of the claimed protein and immunogenic composition). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant urges that Masignani et al do not teach a deletion or part deletion as of the V region as set forth in previous claim 28, amended claim 28 or new claim 38. Applicant urges that the isolated protein of amended claim 28 consist of the recited C and V regions and Masignani et al neither teach or suggest the claimed proteins. Applicant refers to U.S. Patent No. 6,709,660 B1 and urges that the Masignani document is not prior art. Applicant urges that the comments applied to Peak et al above equally apply to Masignani et al.

Applicant's arguments filed April 12, 2004 have been fully considered but they are not persuasive. The claims are not limited to polypeptides that correspond to SEQ ID NO: 11. The claims encompass isolated proteins that consist of at least one conserved region of SEQ ID NO: 11 and at least one variable region of SEQ ID NO:11, wherein the isolated protein has at least one fewer variable region than a wild-type NhhA polypeptide and wherein upon administration to a mammal the protein elicits an immune response against one or more strains of *N. meningitidis*. Masignani et al teach an isolated protein as set forth in SEQ ID NO: 4 (see page 62), which consists of at least one conserved region (e.g. C4, residues 221-239 and C5, residues 249-604) of SEQ ID NO: 11 and one variable region (e.g. V4, residues 240-248) of SEQ ID NO: 11. The protein of Masignani et al has 99.7 % sequence identity to SEQ ID NO: 38 (see pages 62). Regarding Applicant's comments concerning newly submitted claims 38-42 and 44-46, it should not that residues "144-198" of SEQ ID NO: 11 are not disclosed in the instant specification as a conserved region of the claimed isolated protein. It should be noted that C3 as disclosed by the specification corresponds to residues 135-198 of SEQ ID NO: 11 (see Table 1 of the instant specification). It should be further noted that residue 51 of SEQ ID NO:11 and residues 52-54 of SEQ ID NO:11 are not variable regions of the claimed isolated proteins as set forth in the instant specification. V1 as set forth in the instant specification corresponds to residues 51-108 of SEQ ID NO:11. Regarding Applicant's comment that Masignani et al is not prior art, it should be noted that the instant patent application (09/771, 382) has a filed date of January 25, 2001 which claims priority to a provisional application 60/177,917 filed January 25, 2000, and

therefore Masignani et al is prior art since it was published July 1999. U.S Patent 6,709, 660B1 has no bearing on the publication of WO 99/36544 document. Masignani et al anticipate the claimed invention.

New Grounds of Rejection Necessitated by Amendment

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Newly submitted claims 39-41 and 44-46 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. *This is a new matter rejection.* The amendment filed April 12, 2004 introduced new matter into the claims.

Claims 38-41 and 44-46 recite " an isolated protein consisting of at least one conserved region having an amino acid sequence selected from the group consisting of:

(i) residues 1 to 50 of SEQ ID NO:11;

(ii) residues 109 to 120 of SEQ ID NO:11;

(iii) residues 144 to 198 of SEQ ID NO:11;

(iv) residues 221 to 239 of SEQ ID NO:11; and

(v) residues 249 to 604 of SEQ ID NO:11;

and at least one variable region having an amino acid sequence selected from the group consisting of:

(a) residue 51 of SEQ ID NO:11;

(b) residues 52 to 54 of SEQ ID NO:11;

(c) residues 121 to 134 of SEQ ID NO:11;

(d) residues 199 to 220 of SEQ ID NO: 11; and

(e) residues 240 to 248 of SEQ ID NO:11 wherein upon administration to a mammal the isolated protein elicits an immune response against one or more strains of *N. meningitides.*

Newly submitted claims 39-41 introduces new matter in the claims because residues 144 to 198 of SEQ ID NO: 11 are not a conserved region of SEQ ID NO:11 as set forth in the instant specification (see Table I of the specification) and residue 51 of SEQ ID NO: 11 and residues 52 to 54 of SEQ ID NO: 11 are not variable regions of SEQ ID NO:11 as set forth in the instant specification (see Table I of the specification).

Status of Claims

8. Claims 33 and 34 appear to be free of the cited prior art.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

10. Any inquiry of the general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308–0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Office Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for the Group 1600 is (703) 872-9306.

Any inquiry concerning this communication from the examiner should be directed to Vanessa L. Ford, whose telephone number is (571) 272-0857. The examiner can normally be reached on Monday – Friday from 9:00 AM to 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith, can be reached at (571) 272-0864.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov./>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vanessa L. Ford
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July 14, 2004

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